

REMARKS

Claims 1, 5-10, 12-18, 20-25 are pending in the application. Claims 2- 4, 11, 19 and 26-29 have been cancelled. Claim 6 has been amended to correct a typographical error. Claim 18 has been amended to recite that the copolymer is a polyolefin copolymer and claims 22 and 23 have been amended to recite that the copolymer is an ethylene copolymer.

Claims 1, 5-7, 10, 12-15, 18 and 20-23 have been rejected under 35 U.S.C. §102(e) as anticipated by Ohno et al. (US 5,811,163). The Examiner has stated that Ohno discloses an in-mold label that has a thermoplastic resin film base layer (core layer) and a heat sealable resin layer wherein the heat sealable resin layer comprises as the main component an ethylene/ α -olefin copolymer obtained by copolymerizing ethylene and an α -olefin having from 3 to 30 carbon atoms using a metallocene catalyst. The Examiner has further stated that the ethylene/ α -olefin copolymer has a temperature rising elution peak temperature from 20 to 85°C.

Applicants respectfully request withdrawal of the rejection under 35 U.S.C. §102(e) based on Ohno et al. because Applicants claimed invention is not disclosed or suggested by Ohno et al. In the claimed invention, the polyolefin copolymer of the heat seal layer is characterized as having very specific thermal properties, i.e. a peak melting point of less than about 110°C and less than 25% of the polyolefin melting at less than 50°C. The significance of these specific thermal properties is that the particular polyolefin of the present invention does not exhibit the typical "plate-out" problems associated with conventional polymers used in heat seal layers. As discussed on page 3 of the specification, plate-out is caused by the separation of the low molecular weight fraction from the main fraction of the polymer. As one skilled in the art would appreciate, a polymer typically contains molecules of varying molecular weight. This is why the molecular weight of a polymer is defined as the number average molecular weight (M_N) or the weight average molecular weight (M_W). Applicants have discovered that by selecting particular polyolefin copolymers based on their thermal properties, the problems associated with plate-out, as well as other problems experienced in the in-mold manufacturing process,

including blistering, non-uniform heat seal activation and shrinkage, can be reduced or eliminated.

Ohno et al. discloses an in-mold label in which the heat seal layer contains a lower melting point thermal plastic resin to allow for satisfactory adhesion to containers made of high density polyethylene or polypropylene, and which prevents burrs when punched out of the label sheet. However, there is no disclosure in Ohno et al. of an in-mold label wherein the heat seal layer is made from a particular polyolefin copolymer having a peak melting point of less than about 110°C and less than 25% of the polyolefin melting at less than 50°C. Accordingly, Applicants submit that there is no explicit and enabling disclosure of all of the features of claim 1 in Ohno.

The Examiner states that Ohno discloses that the ethylene/ α -olefin has a temperature rising elution peak temperature from 20° to 85°C. The temperature rising elution fraction (TREF) is a method in which a polymer is completely dissolved at a high temperature and then cooled, thereby effecting formation of a thin polymer layer on the surface of an inert carrier, the temperature is increased continuously or stepwise to recover the eluted component. A graph drawn by the elution fraction and elution temperature is the elution curve by which a compositional distribution (distribution of molecular weight and crystallinity) of the polymer can be measured. The shape of the elution curve obtained by TREF varies depending on the distribution of molecular weight and crystallinity of the polymer.

It cannot be concluded from the temperature rising elution peak temperature recited for the copolymer of Ohno et al. that the copolymer would meet all of the requirements of claim 1, namely having a peak melt temperature of less than about 110°C and where less than about 25% of polyolefin melts at a temperature of less than 50°C as measured by differential scanning calorimetry. Accordingly, Applicants respectfully submit that claims 1, 5-7, 10, 12-15, 18 and 20-23 are not anticipated by Ohno et al.

Claims 8, 9, 23 and 24 have been rejected under 35 U.S.C. §103(a) as being unpatentable over Ohno et al. The Examiner contends that although Ohno is silent with regard to the additional polymers in the heat seal layer, it would be obvious to one of

ordinary skill that the physical properties of the label could be altered by varying the polyolefin that is added to the ethylene/ α -olefin copolymer of Ohno et al.

Applicants respectfully disagree with the Examiner's contention. As discussed above, Ohno et al. fails to teach or suggest a heat seal layer made from a particular polyolefin copolymer having a peak melting point of less than about 110°C and less than 25% of the polyolefin melting at less than 50°C as claimed by Applicants. Based on the teachings of Ohno, there is no motivation provided to one skilled in the art to modify the copolymer of Ohno to add other polymers to the copolymer as the addition of such polymers would affect the TREF curve. Ohno discloses at column 10, lines 34-40 that if the peak temperature of the elution curve exceeds the upper limit, the copolymer has poor low temperature heat sealability, and if the H/W value is below the lower limit, the copolymer has poor heat sealability with the passage of time due to a large portion of tacky components contained therein. Furthermore, even if there were provided some motivation to alter the copolymer of heat seal layer of Ohno, the resulting copolymer would not be the heat seal layer as claimed by Applicants. Specifically, it would not be a heat seal layer made from a particular polyolefin copolymer having a peak melting point of less than about 110°C and less than 25% of the polyolefin melting at less than 50°C. Applicants respectfully request the withdrawal of the rejection of 8, 9, 23 and 24 under 35 U.S.C. §103(a) based on Ohno et al.

Claims 9 and 24 have been rejected under 35 U.S.C. §103(a) as being unpatentable over Ohno et al. in view of Mumpower et al. (US 5,374,459). The Examiner contends that although Ohno is silent with regard to whether EVA could be blended with the polyolefin, it would have been obvious to one of ordinary skill in the art to combine the in-mold layer of Ohno with the outer layer of Mumpower because the film of Ohno with the modified outer layer would provide a film with improved tackifying properties during the in-molding process.

Applicants respectfully disagree with the Examiner's contention. As discussed above, Ohno et al. fails to teach or suggest a heat seal layer made from a particular polyolefin copolymer having a peak melting point of less than about 110°C and less than 25% of the polyolefin melting at less than 50°C as claimed by Applicants. Not only does

Ohno et al. fail to teach the desirability of adding EVA to the heat seal layer, Ohno specifically teaches away from the desirability of EVA containing heat seal layers. At column 1, lines 39-46, Ohno discloses that the use of an ethylene/vinyl acetate copolymer as a heat seal resin results in an increased percentage of label rejects upon label punching because the label sheet containing such a heat sealable resin layer has poor punchability and yields labels having burrs. Mumpower is directed to a multilayer laminate for the long-term storage of food products. The combined teachings of Ohno and Mumpower do not result in a heat seal layer made from a particular polyolefin copolymer having a peak melting point of less than about 110°C and less than 25% of the polyolefin melting at less than 50°C as claimed by Applicants. Accordingly, Applicants respectfully request the withdrawal of the rejection of claims 9 and 24 under 35 U.S.C. §103(a) based on Ohno et al. in view of Mumpower.

CONCLUSION

In view of the foregoing amendment and remarks, Applicants respectfully request reconsideration and a timely issuance of a notice of allowance for claims 1, 5-10, 12-18, 20-25.

In the event any fees are due in connection with the filing of this document, the Commissioner is authorized to charge those fees to our Deposit Account No. 18-0988 under Attorney Docket No. **AVERP2203USA**.

Respectfully submitted,

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